

## **Sections 7-7-8: Designing Simulations with Technology**

**Warm-up:** Go to the wiki and click on the “Stick or Switch” link under Sections 7-7 and 7-8. Use this virtual manipulative to complete the in-class activity on page 464.

What should the strategy of contestant be? Stick? Switch?

*Simulation:*

*Monte Carlo method:*

*Ways we can runs simulations:*

*Example 1:* Four darts are thrown randomly at a coordinate plane and the quadrants in which they land are recorded. If the dart lands on an axis, it is thrown again. It is desired to simulate the probability that all four darts land in at most two of the quadrants. That is, if 1 dart lands in Q1 and 3 land in Q4, then there is a success. Design a simulation with 50 trials to estimate this probability.

*Table of Random Numbers:*

*Example 2:* Explain how do use a table of random numbers to simulate the trials in Example 1.

*Prob Sim on the TI-83/84:*

*Random Numbers on the TI-83/84:*

*Example 3:* A particular state lottery has a game in which a winner receives \$10 for a \$1 entry, but only 3 in 50 entries win. Explain how to use technology to simulate the results of 100 bets.

*Example 4:* Matt Mitarnowski has a batting average of .250. In his next 10 at bats, what is the probability that he gets exactly 3 hits?

*Example 5:* What could we use as a simulation when the following ratios are given:

a. 1:2

b. 1:4

c. 1:6

Homework:

***"The human mind treats a new idea the same way the body treats a strange protein; it rejects it." – P.B. Medawar***